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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,624	10/28/2003	Ryan Taylor Herbst	5693P225	5633

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NETWORK APPLIANCE/BLAKELY
1279 OAKMEAD PARKWAY
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EXAMINER	
PEUGH, BRIAN R.	
ART UNIT	**PAPER NUMBER**
2187	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/696,624	HERBST ET AL.	
	Examiner	Art Unit	
	Brian R. Peugh	2187	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 May 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17 and 55-57* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17,55-57* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment

This Office Action is in response to applicant's communication filed May 14, 2007 in response to PTO Office Action dated April 13, 2007. The applicant's remarks and amendment to the specification and/or claims were considered with the results that follow.

Claims 1-17 and 55-57 have been presented for examination in this application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 55 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daynes (US# 6,343,339), Tanenbaum,

Regarding claim 55, Daynes teaches a method comprising: receiving a semaphore operation command from a network processor through an intra-system interface, the command to identify one of a plurality of semaphores [proc. receives messages/code [col. 6, lines 50-52 & 58-59], which may be OOP [col. 7, lines 17-34], which extends to locking/unlocking operations [col. 8, lines 11-29]; see also column 11,

lines 7-33; col. 6, lines 35-40 & 50-56]; updating a data structure in a memory according to the semaphore operation command [queue, col. 11, lines 20-22].; and returning a semaphore operation result to the network processor through an intra-system interface, the result to indicate an outcome of the command [TILS can be implemented as a hash table (column 15, line 43); locking and releasing the lock and acknowledgment that the lock is available].

However, Daynes fails to teach that the semaphore comprises hardware circuitry. Tanenbaum teaches that hardware and software are logically equivalent [page 11].

Therefore it would have been obvious to one of ordinary skill in the art having the teachings of Daynes and Tanenbaum before him at the time the invention was made to modify the semaphore software of Daynes to include that of the hardware, as taught by Tanenbaum, in order to realize benefits in cost, speed, and reliability [page 11, para. 3].

Regarding claim 56, Daynes teaches delaying the returning operation until after a second semaphore operation command from the network processor has been completed [col. 11, lines 28-29].

Claims 1-17 and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Daynes (US# 6,343,339), Tanenbaum, and Pham (US# 6,535,968).

Regarding claim 1, Daynes teaches a semaphore [circuitry], coupled to said processor interface, that receives a signal from said network processor [server (126)],

and that controls a semaphore related to said signal for locking and unlocking access to data [proc. receives messages/code [col. 6, lines 50-52 & 58-59], which may be OOP [col. 7, lines 17-34], which extends to locking/unlocking operations [col. 8, lines 11-29]; see also column 11, lines 7-33; col. 6, lines 35-40 & 50-56].

However, Daynes fails to teach that the semaphore comprises hardware circuitry. Tanenbaum teaches that hardware and software are logically equivalent [page 11].

Therefore it would have been obvious to one of ordinary skill in the art having the teachings of Daynes and Tanenbaum before him at the time the invention was made to modify the semaphore software of Daynes to include that of the hardware, as taught by Tanenbaum, in order to realize benefits in cost, speed, and reliability [page 11, para. 3].

Daynes and Tanenbaum fail to teach a ZBT that interfaces said processor to a network processor [server (126)] configured to perform a storage function. Pham teaches a ZBT that interfaces said processor to a network processor [server (126)] configured to perform a storage function [Fig. 1; col. 2, lines 29-42 & col. 6, lines 41-46]. Therefore it would have been obvious to one of ordinary skill in the art having the teachings of Daynes, Tanenbaum, and Pham before him at the time the invention was made to modify the system of Daynes and Tanenbaum to include the ZBT system of Pham, because then performance could be improved by eliminating wasted cycles between read and write storage operations [col. 2, lines 38-42].

Regarding claim 2, Daynes teaches, wherein said semaphore circuitry manages a queue for access to said semaphore [queue, col. 11, lines 20-22].

Regarding claim 3, Daynes teaches wherein said semaphore circuitry receives a second signal from said network processor and removes a request from said queue in response to said second signal when said network processor no longer desires said semaphore [clearing deadlock conflict].

Regarding claim 4, Daynes teaches wherein said semaphore circuitry refrains from sending to said network processor a second signal indicating said semaphore is unavailable, whereby said network processor continues to wait for said semaphore and said semaphore circuitry maintains ordered access to said queue [col. 11, lines 28-29].

Regarding claim 5, Daynes teaches that said signal comprises one of a plurality of access requests for one of a plurality of semaphores, wherein said semaphore circuitry manages said plurality of access requests in a plurality of queues, and wherein each of said plurality of queues corresponds to a respective one of said .plurality of semaphores [TILS (column 15, line 40)].

Regarding claim 6, Daynes teaches a command queue that stores said signal received from said network processor [wait queue].

Regarding claims 7-8, and 10, Daynes teaches that said semaphore is a structure in a hash array, and wherein said semaphore circuitry comprises a hash key

generator that performs a hashing function on said signal for accessing said hash array; an update engine that receives a second signal from said network processor relating to a first process thread on said network processor, releases a lock on said semaphore related to said second signal, and sends a third signal to said network processor associating said semaphore with a second process thread on said network processor [TILS can be implemented as a hash table (column 15, line 43); locking and releasing the lock and acknowledgment that the lock is available].

As per claim 9, Daynes discloses a semaphore queue manager that manages a queue of a plurality of semaphores [lock manager].

As per claims 11-17, claims 11-17 encompass the same scope of the invention as those of claims 1-10. Therefore, claims 11-17 are rejected for the same reasons as stated above with respect to claims 1-10.

Regarding claim 57, Daynes and Tanenbaum fail to teach a ZBT that interfaces said processor to a network processor [server (126)] configured to perform a storage function. Pham teaches a ZBT that interfaces said processor to a network processor [server (126)] configured to perform a storage function [Fig. 1; col. 2, lines 29-42 & col. 6, lines 41-46]. Therefore it would have been obvious to one of ordinary skill in the art having the teachings of Daynes, Tanenbaum, and Pham before him at the time the invention was made to modify the system of Daynes and Tanenbaum to include the

ZBT system of Pham, because then performance could be improved by eliminating wasted cycles between read and write storage operations [col. 2, lines 38-42].

Response to Arguments

Applicant's arguments with respect to claims 1-17 and 55-57 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Peugh whose telephone number is (571) 272-4199. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm. The examiner can also be reached on alternate Friday's from 7:00am to 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Donald Sparks, can be reached on (571) 272-4201. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brian R. Peugh
Primary Examiner
Art Unit 2187
August 6, 2007